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ABSTRACT

An automated student follow-up system developed by a Texas state agency was pilot tested at East Texas State University (ETSU) for the public university system. Students enrolled at ETSU during summer 1991, fall 1991, and spring 1992 who were not enrolled at ETSU during fall 1992 were tracked. The data files were used to determine the present status of the 6,066 former students and included such possibilities as: continuing their education, transferred to another institution, working, or both working and attending school. Information is provided on the type of institution to which students transferred and reasons for leaving. Additional follow-up focused on 58 transfer students to two local community colleges. Tracking of the 2,724 nonreturning graduate level students identified a number of reasons for not returning. Follow-up also was undertaken for graduates who were working full-time and for whom employers confirmed employment, job title, and salary. Information is also provided on average salaries of undergraduates and graduate students for selected majors. Average salaries for male and female Caucasian and African American graduates are also listed. Seven tables present the data. (SW)

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Automated Student Follow-up: A University Perspective

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This paper was presented at the Thirty-Fifth Annual Forum of the Association for Institutional Research held at the Boston Sheraton Hotel & Towers, Boston, Massacusetts, May 28-31, 1995. This paper was reviewed by the AIR Forum Publications Committee and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC Collection of Forum Papers.

Jean Endo
Editor
AIR Forum Publications

Introduction

Offices of institutional research are often asked to track students who enter their institution. Many questions are asked. Do they graduate? Do they transfer to another college or university? How long did they stay or how long did they take to graduate? Did they successfully achieve their educational objectives? These are but a few of the questions that lend themselves to some type of analysis through a student tracking or follow-up system. These and other such questions are asked by administrators, legislators and accrediting bodies who are interested in the success of students as well as institutional effectiveness and program quality.

The automated follow-up system being developed in Texas under the leadership of the State Occupational Information Coordinating Committee (SOICC) can be a powerful tool, for not only tracking students, but also for identifying successful labor market outcomes for education. By record matching in the Texas Higher Education Coordinating Board's databases and the Texas Employment Commission's (TEC) unemployment insurance wage records, the follow-up system can identify where students who leave an institution go. The system identifies those students who continue their education at other public institutions of higher learning, as well as those who have left the institution to enter the workforce. In the latter case these records will have employment and wage earnings noted. An analysis of this information can provide valuable information for university planning and program improvement.

At its inception, the SOICC study dealt exclusively with students at public community colleges. However, in the fall of 1992, East Texas State University (ETSU) was chosen to pilot the study for all Texas public universities. Currently, the SOICC study is being expanded and perfected as a cost-effective automated follow-up system that may be used by all agencies concerned with improving their educational and training programs and job placements. Public schools, JTPA's and others are joining in the development of the system.

Background

For the purpose of this paper, institutional student enrollment data for the periods, Summer I 1991, Summer II 1991, Fall 1991, and Spring 1992 were utilized. The automated student follow-up system utilizes the Texas Higher Education Coordinating Board's (THECB) database to create an initial file of all students who had attended ETSU in any of the semesters, Summer I 1991 through Spring 1992, but were not enrolled at

ETSU in Fall 1992. During this period, there were a total of 6,066 students identified who satisfied these conditions. Of these, 1,336 students had graduated and 4,730 students had left the institution for other reasons. This same study is repeated for each year using the most recent student data. Currently, ETSU has three cohorts at one stage or another of completion. The terms non-returners and leavers are used interchangeably throughout the report.

As indicated in Table 1, the student files were split between undergraduate (2,786) and graduate (3,280). Of the 6,066 leavers, the follow-up database located 2,565 or 94 percent of the graduate level students and 1,785 or 89 percent of the undergraduates as either in another institution, in the workplace, or both. Thus, 5,538 or 91 percent of the leavers were located. Private institutions, military, and out-of-state employment are not included in the search conducted through the TEC and THECB databases.

Table 1

Distribution of Undergraduates and Graduates

Undergraduates	
Graduated	780
Leavers	2,006
Total:	2,786
Graduates	
Graduated	556
Leavers	2,724
Total:	3,280
Total Undergraduate and Graduate Cohort	6,066

How the data file is developed and the different data elements added is presented in Figure 1, following page. The initial THECB file contains the data elements found in columns one and two of Figure 1. Next, the THECB student database file is matched by social security number to the Texas Employment Commission's (TEC) unemployment insurance wage records for the forth quarter of the cohort year. From that match, the information in column three is added for those students employed. Column four of Figure 1 is obtained by an independent contractor (TEX-SIS Student Information

Systems) who sends surveys to each of the employers that were identified by the TEC match. The complete process including three employer follow-ups by TEX-SIS takes between six and nine months before the University gets a compete cohort file with all the elements. Some preliminary file information is released with limited data elements on an ongoing basis.

Figure 1

File History and Development

Coordinating Board		TEC	Employer Follow-Up
Social Security	**Social Security**	**Social Security**	**Social Security**
Ethnicity	FICE matching institution	Employer SIC code	Job Title
Gender	Major	Company Name	Job Classification
Classification	SCH	DBA Name	Wages
Date of Birth	Semester, year of enrollment	Address	Full/Part Time
SCH's Sum I		Wages	Job-Zip Code
SCH's Sum II		Reporting Period	
SCH's Fall			
SCH's Spring			
Type Degree			
Last Semester Enrolled			

The final version of the data file was comprised of 6,066 individual student records contained in 9,853 records. The increased number of records occurred when the individual student record was duplicated for each employment record that was reported. The 6,066 student data elements were expanded to include the following information obtained from ETSU mainframe database.

- Number of hours passed in dropout semester
- GPA of dropout semester
- Cumulative hours attempted

- Cumulative hours passed
- Overall GPA
- Home address including zip code
- TASP, ACT, ACT Scores

The ETSU data file records were matched with the SOICC records with a 99 percent accuracy. Unfortunately, the local data fields (TASP, ACT, ACT) were not complete for all students. Therefore, an analysis involving these items is not included at this time.

Data Analysis

Status of Graduates and Non-Returners

The file allows the researcher to determine the present status of the former student in a number of areas. Table 2, below, describes the status of the graduating and non-returning student regarding whether they are continuing their education, have transferred to another institution, are working, or are both working and attending school. It is important to note that a student who transfers to another institution may be lost to the institution's headcount, but the student is not lost to education.

Table 2

Status of Graduates and Non-Returners

Pursuing additional education only	121
Employed only	4,647
Both: Working Student	767
Total:	5,538[1]

[1] 5,538 of 6,066 students identified equals 91%

Table 3, following page, displays information regarding the type of institution to which students transferred. The majority of transfer students transferred to another four-year university, but a significant number (334 or 37.6 percent) transferred to a community college.

Table 3

Types of Institutions Students Transferred To

Senior Institution	551	62.0
Community College	334	37.6
Public Heath Center	3	0.3
Total Graduate and Undergraduate Transfers:	888	

Additional analysis of these transfer students made the administration aware of the many reasons that students leave. Some of the more important reasons included:

- pursuit of major not available at ETSU,
- transfer to another institution because of job transfer,
- transfer to another institution because the family moved,
- transferred to community college and continued a similar program,
- transferred to community college and changed to a technical program,
- transferred to community college and changed to a health science program, or
- the student only registered to take summer courses while home during summer break.

Although there is no conclusive evidence, two groups of students leaving ETSU are of special interest. One group apparently came to ETSU to obtain the basic university studies part of their education. Perhaps this can be attributed to the fact that ETSU was located closer to their permanent home address and it was less costly to attend, or any number of other reasons. Many of them never intended to remain at ETSU, a fact that was supported by their never having declared a major at ETSU, but declaring a major, as soon as they entered the transferred institution.

Another group transferred, apparently, because their chosen major was not available at ETSU. Twenty-one of the 36 students who declared pre-law or heath fields—neither major degree available at ETSU—transferred by the Fall of 1992. Of the students who transferred with a liberal arts-undeclared or undeclared major, 83 percent of the liberal arts-undeclared majors and 88 percent of the undeclared majors declared a specific major program at the transfer institution.

Local Community College Transfers

An additional follow-up was completed involving 58 transfer students to two local community colleges. A data file was sent to the Institutional Researcher at each college who than ran the ETSU data file against that college's student records. The resulting information confirmed that a significant number were still continuing their education programs and that over 25 percent had received an Associate Degree or a Certificate of Completion. Table 4 indicates that a significant number, 29.3 percent, entered a nursing program which is not available at ETSU.

The transcripts of these local transfer students indicates that a significant number attempted to fulfill their college mathematics requirements at the community college. If students were experiencing academic course problems at the university level, mathematics was usually the area that had the greatest impact, it was determined that many of them returned to the community college to complete those requirements.

Table 4

Follow-Up of 58 Local Community College Transfers

Enrollment Status	Number	Percent
Associate Degree of Certificate of Completion	15	25.9%
Nursing Program	17	29.3%
Part-time enrollment	15	25.9%
Persisting Spring 1993	20	34.5%

Non-Returning Undergraduates

It is important to identify and classify the different students who leave or transfer into subgroups in order to simplify the analysis. A number of the major categories where the largest numbers of students were leaving or transferring were identified. Major variables which influenced these categories were identified. A partial list of the variables included:

- did the student change or keep the same major,
- what was the overall GPA, and
- did the student change to an institution closer to the permanent home address.

As would be expected, a number of students left because they were not able to complete college level work. In order to complete this study, all undergraduate leavers were compared to the mainframe database to determine the number no longer eligible for admission (GPA less than 2.00). The number identified with GPA's less than 2.00 was 89 or 4 percent of the total leavers. One group of leavers was identified as having transferred from a community college to ETSU and, after one or more unsuccessful semesters at ETSU, transferred back to the same community college where they started their academic career. The complete GPA study is presented in Table 5. As expected, the leavers are concentrated in the freshmen and sophomore classes. If a student completes the basic studies portion of their program, the odds of completing the complete college program are significantly increased.

Table 5

Undergraduate Leavers Due to Low GPA's

Class	Number	Avg. Hours Attempted	Avg. Hours Completed	Average GPA
Freshmen	67	9.5	6.0	1.4
Sophomore	14	9.2	7.4	1.7
Junior	3	9.0	7.0	1.6
Senior	5	6.4	5.2	1.2
Totals:	89	9.3	6.2	1.4

Another analysis was done for students only attending one or more of the summer semesters. These students transferred in for the summer, did not declare a major, and returned to their home institution in the fall. The intent of these students never was to graduate from ETSU, but rather to fulfill part of their academic needs while they were home for the summer. This group made up approximately 26 percent of the summer leavers.

Non-Returning Graduate Level Students

The greatest number of leavers were in the Graduate School. There were 2,724 students who entered and left the ETSU graduate program.between Summer I, 1991 and Fall, 1992. The Venn diagram in Figure 2, page 9, indicates that many graduates attend one semester but do not return the following semester for one reason or another. A number of reasons have been identified for the large turnover in the Graduate School.

1. Many of the non-degree graduate students are students who have completed a bachelor's degree and are now returning to complete a teaching certificate. These students, in the past, have not been traced by the system, but represent a significant number of individuals. Since they are not identified by the system as having completed a program, they disappear from the University and are identified only as a leaver not as a completer. A manual count of completers by the Teacher Certification Office identified 659 students as having completed their certification program from the Summer 1991 semester through the summer 1992 semester. This group accounts for 659 of the 1,547 (42.6 percent) identified in Table 6, page 9, as completers in the non-declared major group.

2. Most graduate students (83 percent) are part-time students attending classes in the evening while working full-time. They drop-in and drop-out depending on class availability, work schedules, changes in family life, and other time commitments. This fact is evident by observing that there were only 92 students who attended both the spring and summer semesters, and there were only 232 students (8.5 percent) who attended all three semesters that year.

3. The summer graduate program at ETSU attracts many education majors working towards certification, an endorsement, or a master's degree. Most of the summer students are full-time public school teachers or administrators who attend only during the summer semesters when the public schools are closed. In fact, 1,894 or 69.5 percent of the graduate students attended for only one semester, and of those 1,005 or 36.9 percent were summer only attendees (See Figure 2, following page).

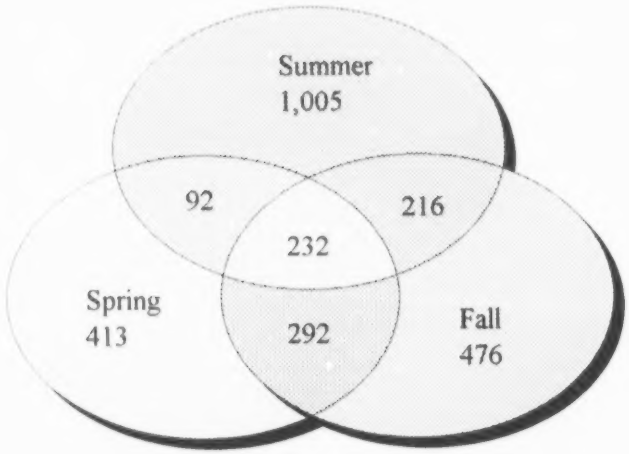
Table 6

Graduate School Leavers by College

College	Number	Percent
Education	863	31.7
Business & Technology	67	2.5
Arts & Sciences	247	9.0
Non-Declared Major	1,547	56.8
Total:	2,724	

Figure 2

Graduate School Leavers



Work Force Study

This study focused on the link between the 1992 leaver cohort and the employer follow-up survey. The total number of 1992 ETSU graduates included in the initial employer follow-up survey was 1,228 and was split between undergraduate and graduate as follows:

- 754 Undergraduate
- 474 Graduate

For the purpose of this report, only those graduates who were working full-time and for whom there was a completed employer response to confirm employment, job title, and salary were included. There was an overall 69.9 percent response to the independent contractor's survey by the employers identified in the Texas Employment Commission's (TEC) match. The 69.9 percent response applied to the entire employer survey which included part-time graduates as well as the leavers. Of the 1,228 graduates, there were a total of 598 responses that met this criteria. The 598 full-time employees were split between undergraduate and graduate students as follows:

- 344 Undergraduate
- 251 Graduate

It was noted by the researcher that a significant number of undergraduates had not obtained employment in the students field of study at the time the match was completed. This was a visual observation done by comparing the major and the job title indicated by the employer. This would not be unusual since the match was done on fourth quarter earning and approximately one-third of the undergraduates would not have graduated until the middle of August and may not have found permanent employment in their chosen field.

Undergraduate Salaries by Major

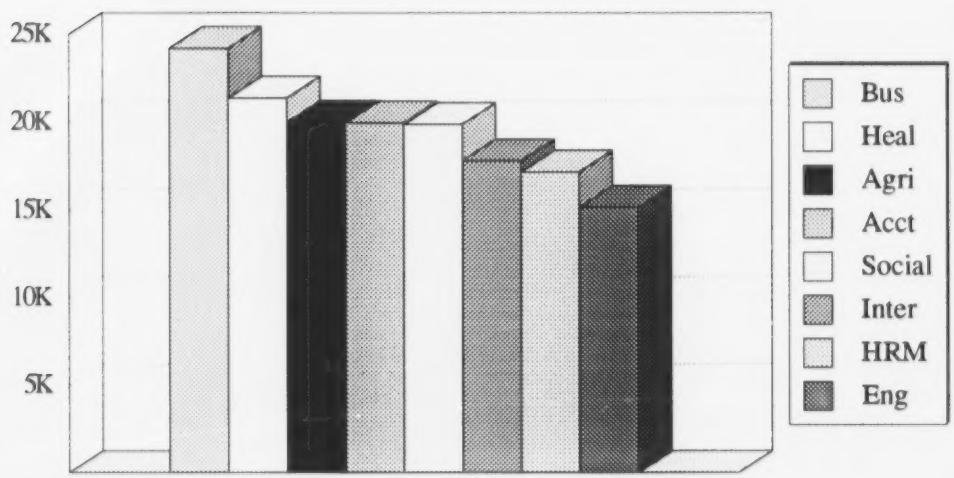
The salaries are displayed by undergraduate and graduate, by course of study, by ethnicity and gender. The salaries for undergraduates are presented for the top eight majors by average salary, in addition, Figure 3, following page, provides a graphical representation of the salaries received by those majors. The top eight majors with average salary include:

✓	General Business	$24,208
✓	Health and Physical Education	$21,386
✓	Agriculture	$20,005
✓	Accounting	$19,964

✓	Social Work	$19,882
✓	Interdisciplinary Studies	$17,813
✓	Human Resources	$17,162
✓	English Language	$15,162

Figure 3

Average Salaries of Undergraduates by Major



A majority of the graduates find entry level positions in the Dallas/Fort Worth Metroplex and surrounding area. Hopkins, Hunt, and several other counties surrounding ETSU make up a major portion of agricultural employment base for Texas. Thus, it is no surprise that agricultural majors have no problem finding employment in the area and demand above average salaries. Entry level accounting salaries have dropped off, in part due to the large number of accounting majors graduating in the Metroplex during the last ten years. The social work program has seen increases in both overall numbers of graduates and entry level salaries.

In Texas, Interdisciplinary Studies is the major program area for elementary public school teachers. In order to be certified to teach the student completes a degree program in interdisciplinary studies along with completing a certification program.

Graduate Salaries by Programs

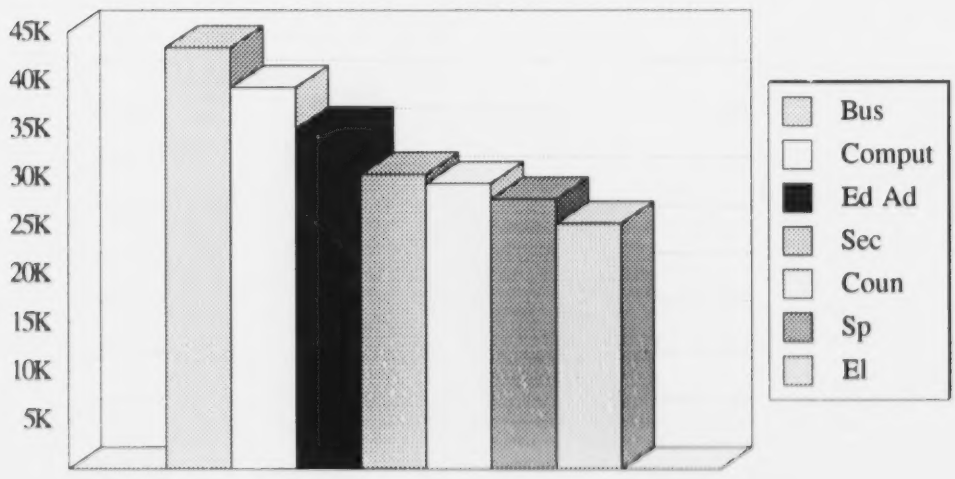
The top seven graduate programs listed by average salary are presented below and in Figure 4, below. These programs include:

✓ Business (MBA)	$43,375
✓ Computer Science	$39,281
✓ Educational Administration	$35,009
✓ Secondary Teacher	$30,323
✓ Counselor Education	$29,370
✓ Special Education	$27,770
✓ Elementary Education	$25,293

The program with the highest average salary is the Master's of Business Administration (MBA). ETSU has a strong business program which attracts students from the Dallas/Fort Worth Metroplex area. One major supplier of candidates for the MBA program is E-Systems, Greenville, Texas, a defense contractor located about thirty miles from the main campus. Many of the students come into the program with engineering backgrounds planning to supplement their education with a business degree.

Figure 4

Average Salaries of Graduates by Major



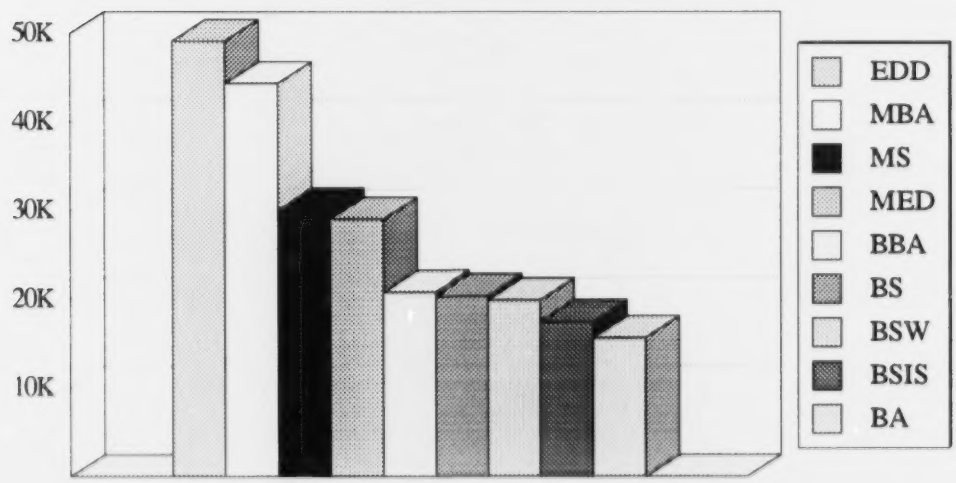
A comparison of the increased salary based on continuing a person's education and obtaining a master's degree can be projected by comparing Figures 3, page 11, and 4, page 12. A comparison of wages received as a beginning elementary public school teacher (Interdisciplinary Studies) at $17,813 is compared to the average salary of an educational administrator at $35,009 having completed a master's degree program in Educational Administration. Similar comparisons can made in other program areas to help emphasize the importance and financial impact of lifelong learning. The professional educator who has continued his/her education beyond the baccalaureate level will be rewarded with increased wage compensation. The highest wages paid in the public schools are in the administrative areas, but increases can also be realized by obtaining endorsements to teach in additional areas such as special education.

Average Salary by Degree

The impact of higher learning can also be visualized in Figure 5, below, which graphically presents the average salaries received by ETSU graduates at the different degree levels. Figure 5 also breaks down the degrees by the different programs available at ETSU.

Figure 5

Average Salaries by Degree



One important point to remember is that the master's and doctoral programs normally involve students who have full-time positions while working on an advanced degree These salaries are the result of ongoing employment rather than entry level positions

which is the case for the student just receiving the bachelors degree. The higher salaries of the MBA program are somewhat influenced by the number of E-Systems employees involved in the program. Many of these students are highly paid professional engineers and earn substantial salaries while working on their MBA degree.

Salaries by Ethnicity and gender

The study involving ethnicity and gender was limited to the Caucasian and African American populations because the reported numbers of other minorities were too small to report in some areas. Table 7, below, describes these populations.

Table 7

Average Salaries by Ethnicity and Gender

Ethnicity	Number	Average Salary	Male	Average Salary	Female	Average Salary
Undergraduate						
Caucasian	289	20,244	107	23,092	182	18,569
African American	24	17,214	13	20,050	11	13,861
Graduate						
Caucasian	229	31,767	90	34,973	139	29,691
African American	11	32,399	4	38,209	7	29,079

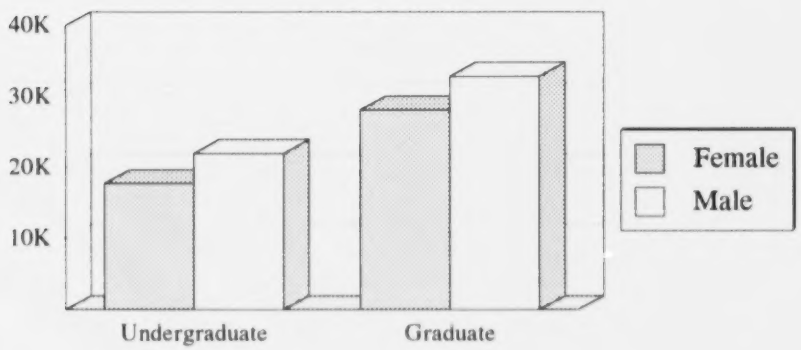
Table 7 indicates that at the undergraduate level the Caucasian make about three thousand dollars a year more than the African American undergraduate, but the average salary for graduate level is just the opposite with the African American making the higher average salary. When looking at male versus female average salaries at the undergraduate level, the same variation of three thousand dollars is reflected between the Caucasian and African American males, but the variation is slightly higher (approximately four thousand) for female Caucasian versus female African American.

At the graduate level the reverse is true. The African American male average salary is over three thousand dollars higher than the Caucasian male, while there is very little difference between the female salaries.

If you look at only the gender equity portion of the study, the variation of male versus female at the undergraduate and graduate levels is very consistent. Figure 6, below, presents the average salaries by gender at both the undergraduate and graduate levels. The difference between male and female average salaries at the undergraduate level is four thousand dollars (female, $17,705; male, $21,991). This difference is consistent with the difference at the graduate level (female, $28,122; male, $32,863). Some of the differences at the undergraduate level can be explained by the number of female undergraduates from ETSU that go into elementary education which was one of the lower paying professions as depicted in Figure 3, page 11. Although Figure 4, page 12, and Figure 5, page 13 depicts the higher salaries due to advanced degrees, the differences in gender salaries are not diminished by the higher degree but remain constant.

Figure 6

Salaries for Undergraduate and Graduate by Gender



Future Studies

ETSU is expanding this study in a number of ways. The salary data for the 1992 cohort will be compared with new salary data for the same group of graduates based on the 1994 forth quarter wages. The data file including the employer survey is being completed by the independent contractor (TEX-SIS) by the end of May 1995 and will be presented at the statewide meeting of SOICC in June. The new data file will provide a two year longitudinal salary and job relatedness study. Of particular interest is the job relatedness of undergraduates after two years into the job market.

With the emphasis on job relatedness or put another way, did the graduate find a job in his/her field of study, the automated student follow-up has become a very important of

ETSU's documentation of its successful program outcomes. In the first run of the 1992 cohort, there were a number of problems and concerns with the OES occupational crosswalk, the computer program which assigns each employee the degree of job relatedness based on the relationship between his/her major and the job title classification. Many of the job classifications returned a code of not related because the OES crosswalk did not take into account that teachers in Texas do not receive a degree in education, but rather, they are awarded a degree in their field of study or interdisciplinary studies for elementary teachers and than they are certified to teach. The Institutional Research Department worked with the SOICC and TEX-SIS and were able to correct most of the discrepancies. It is expected that the 1993 cohort and the rerun of the 1992 cohort should provide more reliable information pertaining to job relatedness.